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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,365	03/18/2004	Patrick Brant	2003B044/2	7914
7590 05/24/2006				
ExxonMobil Chemical Company				
Law Technology				
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		EXAMINER		
		LEE, RIP A		
		ART UNIT PAPER NUMBER		
		1713		

DATE MAILED: 05/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/803,365

Applicant(s)

BRANT, PATRICK

Examiner

Rip A. Lee

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-16 and 18-28 is/are pending in the application.
- 4a) Of the above claim(s) 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-13, 15, 16 and 18-28 is/are rejected.
- 7) ☒ Claim(s) 1, 4-6, 11 and 14-16 is/are objected to.
- 8) ☒ Claim(s) 1-6, 8-16 and 18-29 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action follows a response filed on March 22, 2006. Claims 1, 11 and 23 were amended, and claims 7 and 17 were canceled. Claims 1-6, 8-16, and 18-28 are pending.

Election/Restrictions

1. Applicant's election with traverse of group I, claims 1-28, is acknowledged. The traversal is on the ground(s) that the restricted groups are in the same field of search and would not present undue burden to the examiner. This is not found persuasive because inventions have been established to be unrelated (see paragraph 2 of the previous office action).

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. Claims 1 and 11 are objected to because of the following informalities: The propylene can not comprise a ratio of two g's, as recited. Please change section (b) to "exhibits a ratio of two g's," or some similar phrase.

3. Claims 4 and 14 are objected to because of the following informalities: It is not clear from the claims what R^8 represents. The claim merely defines R^{14} , R^{15} , and R^{16} without indication that R^8 is any particular embodiment. That the claim recites R^{14} , R^{15} , and R^{16} does not imply that R^8 is necessarily the bridging group $-(R^{14})-M2-(R^{15})-(CR_2^{16})-$. That is, group R^{16} may very well be an alkyl group, but R^8 may be the group $-(R^{14})-M2-(R^{15})-$. Appropriate correction is required.

4. Claims 6 and 16 are objected to because of the following informalities: It is not clear what values integers m and n represent. That R^9 and R^{10} are recited does not imply the minimum condition that at least one of m or n is not zero. That is, R^9 and R^{10} may well be alkyl groups, but m and n may be zero, in which case, these claims fail to limit the claims from which they depend. Appropriate correction is required.

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5. Claims 1, 5, 11, and 15 are objected to because of the following informalities: The claims are drawn to indenyl ligands bridged by the group $-C(R^9)(R^{10})-H-C(R^9)(R^{10})-$; integers m and n equal unity. This calls for a bridging hydrogen, which is well-established in borane chemistry, but which remains elusive in the context of hydrocarbon bridging groups in metallocene chemistry. Note that $C(R^9)(R^{10})$ is not a boron-based fragment. Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1-6, 8-13, 15, 16, 18-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Winter *et al.* (U.S. 5,304,614).

Winter *et al.* discloses a process of polymerization of olefin in the presence of a catalyst comprising transition metal complexes having general formula (I), as shown in claims 1-8. Notably, substituents R^5 and R^6 are not hydrogen. Representative compounds include *rac*-Et(4,7-Me₂-Ind)ZrCl₂, *rac*-Et(2,4,7-Me₃-Ind)ZrCl₂, and *rac*-1,2-butanediyl(4,7-Me₂-Ind)ZrCl₂ (claim 4 and examples). According to the inventors, catalysts of the invention are used for polymerization or copolymerization processes, and in particular, propylene and ethylene are polymerized (col. 7, line 23). Example 19 shows that the copolymerization of propylene and ethylene is clearly within the scope of the claims of the patent.

The examples show use of the compounds listed above in a process for polymerization of polypropylene, but there are no examples in which the same compounds are used in a process for copolymerization of propylene and ethylene. Despite this, one of ordinary skill in the art would have found it obvious to use the compounds in a copolymerization process because Winter *et al.* teaches that compounds of the invention are used for this exact purpose. Regarding the molecular weight, it would have been obvious to one having ordinary skill in the art to manipulate reaction conditions in order to arrive at the desired molecular weight range, and the examples show that it is quite possible to obtain polymer having M_w greater than 20,000.

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Moreover, it has been held that the discovery of optimum values of result-effective variables in a known process is within the level of ordinary skill in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980). With regard to the property "ratio of two g's," one of ordinary skill in the art would have found it obvious to expect the resulting polymers to exhibit such a property, in light of the fact that the process of using the compounds of Winter *et al.* in a process of copolymerization of propylene and ethylene is essentially the same as the process recited in the instant claims. Furthermore, one of ordinary skill in the art would have expected polymers to exhibit the claimed feature since catalysts of the invention appear to produce polymers that have higher molecular weight with upon incorporation of comonomer.[†] Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

8. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten to overcome claim objections (*supra*) and if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. The rejection of claims under 35 U.S.C. 102 (Galimberti *et al.* (*Macromolecules*, 1999), Winter *et al.* (U.S. 5,304,614), and Herrmann *et al.* (U.S. 6,143,846)) has been overcome by amendment. The corresponding claims under 35 U.S.C. 103(a) have been withdrawn.

Applicant's arguments with respect to the rejection of claims over Machida *et al.* (U.S. 6,794,476) have been considered fully, and they are persuasive. Accordingly, the rejection has been withdrawn.

[†] In Example 1, propylene is homopolymerized in the presence of a catalyst comprising $\text{Me}_2\text{Si}(4,7\text{-Me}_2\text{Ind})_2\text{ZrCl}_2$. The M_w of the resulting polymer is 12,500. In example 19, the experiment was repeated except ethylene was metered in during the polymerization. The resulting propylene-ethylene copolymer has M_w of 15,600. Thus, incorporation of comonomer appears to result in polymer having higher molecular weight.

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Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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May 19, 2006


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